

**ROCKY FLATS PLANT
EMD OPERATING
PROCEDURES MANUAL**

**Manual No.: 5-21200-OPS-EE
Procedure No.: Table of Contents, Rev 1
Page: 1 of 2
Effective Date: 10/18/91
Organization: Environmental Management**

THIS IS ONE VOLUME OF A SIX VOLUME SET WHICH INCLUDES:

**VOLUME I: FIELD OPERATIONS (FO)
VOLUME II: GROUNDWATER (GW)
VOLUME III: GEOTECHNICAL (GT)
VOLUME IV: SURFACE WATER (SW)
VOLUME V: ECOLOGY (EE)
VOLUME VI: AIR (AP)**

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FOR VOLUME V: ECOLOGY**

<u>New Proc. No.</u>	<u>Old Proc. No.</u>	<u>Title</u>	<u>Rev No</u>	<u>Effective Date</u>
EE 01	5 1	Sampling of Periphyton	1	5/91
EE 02	5 2	Sampling of Benthic Macroinvertebrates	1	5/91
EE 03	5 3	Sampling of Plankton	1	5/91
EE 04	5 4	Sampling of Fishes	1	5/91
EE 05	5 5	Sampling of Large Mammals	1	5/91
EE 06	5 6	Sampling of Small Mammals	1	5/91
EE 07	5 7	Sampling of Birds	1	5/91
EE 08	5 8	Sampling of Reptiles and Amphibians	1	5/91
EE 09	5 9	Sampling of Terrestrial Arthropods	1	5/91
EE 10	5 10	Sampling of Vegetation	1	5/91
DCN 91 01		To clarify methods for conducting vegetation surveys	1	8/19/91
EE 11	5 11	Identification of Habitat Types	1	5/91

**DOCUMENT CLASSIFICATION
REVIEW WAIVER PER
CLASSIFICATION OFFICE**

ADMIN RECORD

4 5W-0000911

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EE 12	5 12	Sampling of Soil for Soil Description	1	5/91
EE 13	5 13	Development of Ecology Field Sampling Plans	1	5/91
DCN 91 01		The outline for a field sampling plan is modified	1	8/20/91
EE 14	5 14	Assignment of Species Codes	1	5/91
EE 15	5 15	Assignment of Wildlife Habitat Codes	1	5/91
APPA		Appendix A Species Codes	1	5/91
APPB		Appendix B Wildlife Habitat Code	1	5/91

ENVIRONMENTAL RESTORATION & WASTE MANAGEMENT PROCEDURE CHANGE NOTICE (PCN)

PRESS FIRMLY AND PRINT LEGIBLY OR TYPE PROPOSED CHANGES TO INCLUDE ANY WORK IS MADE ON ALL COPIES.

Procedure Number Ecology Volume V, # 5.13, REV 1.0F (E 5.13) EG&G — RDC

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ENVIRONMENTAL MAN.

Title Development of Ecology Field Sampling Plans	Date 8-19-91	PCN Number 5.21200.0P3 5.21200.01
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URGENT Expires _____

TEMPORARY Expires: 11-15-91

Item Number	Page	Step or Paragraph	Changes (Use PCN CONTINUATION SHEET for additional space)
1	20	Sec 6.5	The outline for a field sampling plan shall be modified as per Attachment 1. (See attachment)

Justification (Reason for change - Provide numbers to reference corresponding items above.)

As written, the Field Sampling Plan outline does not show enough detail. To clarify and make it more specific, details have been added to the outline. Also, slight adjustments were made which relocate specific sections of the outline. No sections were deleted, only rearranged. Some words were changed to parallel the EPA Guidance Document - EPA/540/G-89/004

Concurrence	Organization	Req.	Date	Concurrence	Organization	Req.	Date
Larry McEnroy	QA/M	X	8/12/91		User		
by M. Brogden							
<i>[Signature]</i>							
					Other		

13. Approval of Responsible manager

14. Date

15. Is Posting required?

16. If Yes, by what date

17. Date posted

Meredith L. Brogden for Ralph Lindberg 8/19/91

Yes No

Field Sampling Plan Outline

I Site Background

A Study site detail

- 1 Operable Unit description
 - a location at RFP, areal extent including potential zone of influence
 - b IHSS's within the OU
 - c overview of the ecology at the OU
 - 1 vegetation / habitats
 - 2 wildlife
 - 3 aquatics / habitats
- 2 Synopsis of OU specific contamination information
 - a Brief summary of RI activities completed at the site to-date
 - b List of contaminants detected at the OU
 - c References to other documents containing RI results
- 3 Preliminary toxicity assessment
 - a Summary of the concentrations of contaminants detected
 - b Standards, ARARs, or limits set for the ecology risk assessment
 - c Summary of contaminant levels exceeding applicable limits
 - d Brief assessment of potential exposure pathways for biota

II Program Objectives

A Purpose and scope of Environmental Evaluations

- 1 Purpose and scope of the OU EE
- 2 General objectives of the OU EE
- 3 Summary of EE DQOs

B Purpose and scope of the Field Sampling Plan

- 1 FSP application of COCs
- 2 FSP application of selected Target Taxa

C General Field Sampling Approach

- 1 ecological studies
- 2 analytical studies

III Habitat and Taxon-Specific Sampling

A Study Locations

- 1 Sampling Sites
 - a rationale for OU sampling site selection
 - b identification of OU sampling sites
- 2 Reference Sites
 - a rationale for reference site selection
 - b identification of reference sites
 - c Differences between study sites and reference sites
- 3 Overlap of study objectives among different OUs

B Terrestrial sampling

- 1 Plants
 - a Sampling objectives
 - b. Sample locations
 - 1 study sites

- 2 reference sites
 - c. Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 sample times and dates
 - e QA/QC sampling
 - 2 Insects
 - a Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 sample times and dates
 - e QA/QC sampling
 - 3 Birds
 - a. Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 sample times and dates
 - e QA/QC sampling
 - 4 Mammals
 - a. Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 sample times and dates
 - e QA/QC sampling
- C Aquatic sampling
- 1 Plants
 - a Sampling objectives
 - b Sample locations
 - 1. study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs

- d Sampling frequency
 - 1 list sample size
 - 2. sample times and dates
 - e QA/QC sampling
 - 2 Invertebrates
 - a Sampling objectives
 - b Sample locations
 - 1. study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 Sample times and dates
 - e QA/QC sampling
 - 3 Amphibians
 - a Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 sample times and dates
 - e QA/QC sampling
 - 4 Fishes
 - a Sampling objectives
 - b Sample locations
 - 1 study sites
 - 2 reference sites
 - c Sampling equipment and procedures
 - 1 state methods and reference SOPs
 - d Sampling frequency
 - 1 list sample size
 - 2 Sample times and dates
 - e QA/QC sampling

IV Contaminants of Concern and Target Taxa

A Contaminants of Concern (COC)

- 1 Criteria for selection of COCs
- 2 Preliminary selection of COCs
 - a Justification for application of selection criteria

B Ecological receptors of concern

- 1 Criteria for selection of ecological receptors of concern
- 2 Preliminary taxa and tissues selected as ecological receptors of concern
 - a Justification for application of selection criteria

V Sample Handling and Analysis

A Terrestrial

1 Sample designation

- a taxa
- b tissues
- c number of samples and sample coding
- d samples from study sites vs samples from reference sites
- e laboratory QA sample requirements

2 Chemical analyses

- a. selection of target analytes
- b laboratory requirements
 - 1 sample volumes
 - 2 sample preservation & handling

3 Terrestrial Sampling Matrix

B Aquatic

1 Sample designation

- a. taxa
- b tissues
- c number of samples and sample coding
- d samples from study sites vs samples from reference sites
- e laboratory QA sample requirements

2 Chemical analyses

- a selection of target analytes
- b laboratory requirements
 - 1. sample volumes
 - 2 sample preservation & handling

3 Aquatic Sampling Matrix

VI Toxicity Testing

1 Sampling objectives

2 Sample locations

- a media to be collected

3 Sampling equipment and procedures (reference to SOPs)

4 Sampling frequency

5 QA/QC sampling

6 Sample Handling and Analyses

- a species and protocols used
- b laboratory QA